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REMARKS

Independent claims 1, 7 and 15 have been only slightly amended to emphasize some of the particular features of the presently claimed invention. The amendments brought thereto do not incorporate any new subject matter. Indeed, these amendments are either explicitly supported and can be clearly inferred from the specification and drawings. More particularly:

- the wheel web being cylindrical and having a cylindrical rail-engaging surface is mentioned in the specification, for example as on page 13, lines 1-3;
- the top edge of the rail being load-bearing is mentioned in the specification, for example on page 17, line 15; and
- the wheel having a single contact-point rolling engagement with the rails is mentioned in the specification, for example on page 17, line 19.

The Examiner rejects claims 1, 7 and 15 under 35 U.S.C. 103(a) as being unpatentable over Scott *et al.* in view of Krug and further in view of Hall *et al.* Applicant disagrees with the Examiner's rejection, and respectfully asks the Examiner to reconsider his opinion in view of the amendments to the claims, and especially in view of the following arguments.

The present invention claims in independent claims 1, 7 and 15 a push-back storage system that comprises, *inter alia*:

- rails each having a load-bearing top edge on which the wheels bear; and
- wheels each having a web and a pair of side flanges axially spaced-apart along the wheel web so as to define a cylindrical rail-engaging surface on the wheel web between

the spaced-apart side flanges, with the web rail-engaging surface being wider than the top edge of the rail.

Those features are important, since they provide the push-back system with a single contact-point, low-friction rolling engagement of the wheels on the rails. The single contact point is more particularly the point of contact between the wheel web and the rail top edge. This might appear obvious in hindsight when looking upon the Scott, Krug and Hall patents, but it is nothing but obvious, as will be demonstrated hereinafter.

The claimed single contact-point rolling engagement of the wheels on the rails brings about important advantages, as stated in the specification of the present application (see for example page 18, lines 5-14 of the present specification). Having this single contact-point rolling engagement indeed allows the storage capacity of a particular warehouse to be increased, since lower friction means longer storage lanes and in turn means less space lost for the required forklift lanes, among other advantages.

The prior art systems known to applicant, including those cited by the Examiner, all disclose rolling engagements of the wheels on the rails that have two or more contact points. This can be seen for example in the Hall patent where both wheel flanges will bear on the sides of the round rail for a two-point contact (figure 5 of Hall); in the Krug patent where the side flanges of the wheels flatly abut against the corresponding flat side walls of the rails for a multi-point contact (figure 1 of Krug); and in the Scott patent where the wheel web will flatly abut against the flat rail upper surface (figure 7 of Scott).

This multi-point contact is, in fact, seen as desirable in prior art devices since it increases the lateral stability of the loaded carts. Indeed, by providing two or more contact points on either side of the inclined rail, such as in the Hall and Krug patents, the wheels are prevented from moving relative to the rail in use.

The Examiner's attention is drawn to the following passages in Hall:

- column 6, lines 59-62: "*However, it also is possible to use rods of any material or of any cross sectional shape providing (sic) the shape has a round, oval, ellipsoid or otherwise generally rounded surface which may be mounted facing in an upward direction.*" (emphasis added)
- column 7, lines 66-67: "*Each V groove wheel 72 contacts its respective mating rod 42 at two points*".

It is noted that the Krug device is not a push-back storage system, and as such the needs and requirements of the Krug device differ significantly from those of a push-back storage system. It is recalled that the presently claimed invention does not broadly define a cart engaging rails, but specifically a push-back storage system having specially adapted carts equipped with wheels having a single contact-point with the rails.

The above passages, together with the explicit drawings of Krug and Hall, show that these inventions have the purpose of a multi-contact-point engagement of the wheels on the rails. This multi-contact-point engagement increases the friction between the wheel and the rail significantly. Not only that, but the load-bearing surface of the rails is not located centrally on the rail but either spread out along both walls (Krug) or at one point on each side of the curved upper surface (Hall). In either case, the wheel web (which is inexistent in Krug) does not bear on a sharp top edge. Moreover, it could not

be obvious in the system of Hall to have less than two contact points, as Hall specifically states that his rail should have nothing else than a rounded upper surface (which yields a multi-contact point in conjunction with the wheel flanges). Hall thus teaches away from the present invention.

In the system of the present invention, the side flanges of the wheels have for only purpose to guide the cart in case it becomes misaligned along the storage lane. Indeed, in most operating conditions, the side flanges will be useless as the wheel bears on the rail with its central web portion only. This allows for a very low-friction engagement, which is highly desirable in push-back storage systems. As indicated in the specification of the present application, the single contact-point allows the rail inclination to be reduced from 2° to 4° in prior art devices, to $1,7^{\circ}$ with the present system. This is not a trivial inclination reduction, as it represents a 15% to 57,5% reduction, which is very significant!

Neither Krug nor Hall discloses a wheel having a web between spaced-apart side flanges that bears with a single contact-point on a rail having a load-bearing top edge. Moreover, it would not be obvious from the teachings of Krug and Hall to obtain the presently claimed invention, since both Krug and Hall teach away from that particular concept by providing multi-contact-point between the wheel and the rail to improve lateral stability.

Moreover, combining a system as taught in Krug with any other push-back storage system appears very unlikely, as the Krug system is not designed for use in push-back storage systems. Applicant does not see how a person skilled in the art of push-back storage systems would consider the use of the high-friction, low-efficiency rail-and-

wheel assembly of Krug, where enhanced contact between the rail and the wheel appears advantageous since the rails also work to transmit electricity to the cart. It is noted that the carts of push-back systems are frequently loaded with articles that weigh in the thousands of pounds and that low-friction is advantageous, and thus the rail network as defined in Krug would simply not work in a push-back system, suffering high-friction and other important mechanical drawbacks that are obvious for a person skilled in the art.

Not only do the Hall and Krug patents teach away from the invention as claimed in independent claims 1, 7 and 15, but neither discloses nor suggests any motivation to combine the features of the Hall and Krug to obtain the claimed invention. Moreso, Hall specifically states that the wheel and rail arrangement should have two contact points, and Krug (which discloses a non-push-back related invention) not only has no reason to teach anything concerning single contact-point wheel-and-rail push-back systems, but also shows a wheel-and-rail assembly having multiple contact-points.

It is understood that the Scott wheel and rail arrangement differs significantly from the presently claimed wheel and rail arrangement, as Scott was cited by the Examiner for showing a push-back storage system although the wheel arrangement was rejected on the basis of the combination of Krug and Hall. The Scott wheel and rail arrangement will consequently not be discussed in details in the present letter.

Thus, it is strongly believed that, in view of the fact that none of the prior art cited by the Examiner discloses the presently claimed combination, and that it would not be obvious in view of the prior art cited by the Examiner to arrive at the claimed combination, the present independent claims 1, 7 and 15 should be allowable. Since all

dependent claims depend directly or indirectly from claims 1, 7 or 15, the dependent claims should also be found allowable.

Concerning the dependent claims, it is noted that the entire passage relating to "a play" and to "a position" of the wheels has been removed from claims 2 and 8. It is believed that claims 2 and 8 remain clear nonetheless, and that the 35 U.S.C. 112 rejection would now be moot. Although claim 16 was not explicitly mentioned by the Examiner, the same amendments were brought therein. The dependent claims otherwise remain unchanged.

Allowance of the present application is thus respectfully requested.

In the event where only minor changes were required to process this application to allowance, the Examiner is invited to call the undersigned at phone number (514) 861-4831 to work by way of Examiner's amendment so as to expedite the prosecution of this application.

Regards,

LESPEANCE & MARTINEAU


Louis Martineau

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It is hereby certified that this amendment paper, consisting of 15 page(s) including 7 page(s) of the present letter and 8 appended page(s) of annexed amended claims, is being facsimile transmitted to the United States Patent and Trademark Office on May 4, 2006.

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